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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/524,709

02/14/2005

Oug-Ki Lee

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08/10/2006

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EXAMINER

WEEKES, LLOYD

ART UNIT

PAPER NUMBER

2194

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/524,709

Applicant(s)

LEE ET AL.

Examiner

Lloyd Weekes

Art Unit

2194

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>20050214</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the Application filed on February 14, 2005.

Claims 1-6 will be addressed below.

1. Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application. The applicant discusses the Korean utility model registration No 221534 and the Korean patent registration No. 310891 at length in the specification but did not provide copies for review. Include copies of these patents in next correspondence.

This requirement is an attachment of the enclosed Office action. A complete reply to the enclosed Office action must include a complete reply to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action.

Drawings

2. The drawings are objected to because Fig 1 item 26 is not described in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the

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replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informality: typographical errors. On page 9 line 20, the protrusion is referred to as figure 1 item 6 of in the drawing. It is should be figure 1 item 5. Correction is required.

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

On page 6, line 15 the sentence, " In the aforementioned subminiature bone conduction speaker, it is preferable that a howling preventing hole is formed in at least position of the mastoid and the auxiliary vibrating plate" is unclear. Clarification is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which regards as the invention.

7. Claim 1 and 6 state “ a mastoid which is contacted to bone conduction of a user and by which vibration is transmitted to the user”, which is not clear and does not distinctly claim the subject matter. This statement will be interpreted as “a mastoid, which is in contact with a bone conduction of a user and by which vibration is transmitted to the user”.

8. Claims 2-5 depend are dependent on claim 1, and do not clarify the ambiguity of claim 1.

9. Claim 2 also fails to set its boundaries by including the unclear statement “wherein a howling preventing hole is formed in at least position of the mastoid and the auxiliary vibrating plate”. This statement will be interpreted as “wherein a hole is in either the mastoid, the auxiliary vibrating plate or both”.

10. Claim 4 is also indefinite because the term Nd is undefined; it will be interpreted as neodymium iron boron magnetic alloy.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1 and 2 are rejected under 35 U.S.C 102(b) as being anticipated by Yoshii (JP 58182398).

13. Claim 1: Yoshii teaches a subminiature bone conduction speaker using a vibrating plate comprising:

a body having a shape of a cylinder of which upper portion is opened (main body case); (page 13 paragraph 4; Fig 7 item 31)

a yoke (core) which is disposed in a lower portion of the body and of which center has a protrusion; (page 13 paragraph 4, page 6 paragraph 3; Fig 7 item 21)

a ring type magnet (Fig 7 item 20) which is formed on the edge of the yoke and apart from an end portion of the protrusion by a predetermined clearance; (page 6 paragraph 3; Fig 7 item 20)

an upper plate (mounting member) which is formed on the magnet; (page 6 paragraph 3; Fig 7 item 18)

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a mastoid (outer skin contact chip) which is contacted to bone conduction of a user and by which vibration is transmitted to the user; (page 14 paragraph 2; Fig 7 item 16)

an acoustic vibrating plate (suspension plate, Fig 7 item 34') which is inserted at a lower side of the mastoid (outer skin contact chip) to cover the opening portion of the body and which is made of an elastic material; (page 13 paragraph 4; page 6 paragraph 3)

an auxiliary vibrating plate (diaphragm, Fig 7 item 36) which is inserted under the acoustic vibrating plate (suspension plate) which is inserted to the mastoid (outer skin contact chip); (page 14 paragraph 2; page 6 paragraph 3)

a voice coil (moving coil, Fig 7 item 17) which is attached to the auxiliary vibrating plate (diaphragm) and which is inserted between the end portion of the protrusion of the yoke (core) and the ring type magnet; (page 13 paragraph 4 – page 14 paragraph 2; page 6 paragraph 3)

a front cap (cover, Fig 7 item 39) for fixing the acoustic vibrating plate (suspension plate, Fig 7 item 34') on the body; (page 13 paragraph 4) and

an electrical signal input unit (Fig 7 item 26) for inputting an electric signal to the voice coil. (page 9 paragraph 4; page 13 paragraph 2)

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Claim 2: Yoshii teaches a subminiature bone conduction speaker using a vibrating plate according to claim 1, wherein a howling preventing hole (hole in the outer skin contact chip, Fig 7 item 16) is formed in at least position of the mastoid (outer skin contact chip) and auxiliary vibrating plate (diaphragm, Fig 7 item 36). (page 15 paragraph 2)

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshii (JP 58182398).

Yoshii teaches of a subminiature bone conduction speaker using a vibrating plate according to claim 1 above, wherein the acoustic vibrating plate (suspension plate) is made of iron but does not specifically indicate using beryllium copper for this part. However, Yoshii does teach utilizing beryllium copper in his invention because of its high shear modulus (modulus of rigidity). He also discloses that the metal for the acoustic vibrating plate (suspension plate) should have a very large shear modulus (page 11 paragraph 3, page 12 paragraph 2). It would have been obvious to one of ordinary skill in the art, at the time of Yoshii's invention to use beryllium copper for the acoustic vibrating plate because of its very high shear modulus, thus allowing the speaker to operate efficiently.

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Claim 4: Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshii (JP 58182398) as applied in claim 1 above and further in view of Borwick ("Loudspeaker and Headphone Handbook", third edition, John Borwick). Yoshii discloses using a permanent magnet but does not specifically disclose making it of Nd (neodymium iron boron magnetic alloy). However, Borwick discloses that magnets made of Nd are very powerful and that about 10% of the volume of a ferrite magnet, would be required of the neodymium iron boron magnetic alloy to produce the same magnetic field as the ferrite (pages 57 paragraph 3). Thus it would have been obvious to one of ordinary skill in the art at the time of Yoshii's invention to use a permanent magnet made of neodymium iron boron magnetic alloy to achieve a higher performance from the magnet, thus making the speaker a better product.

Claim 5: Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshii (JP 58182398) and further in view of Han (WO 02/25989 A1).

Yoshii teaches of a subminiature bone conduction speaker using a vibrating plate as in claim 1 above, and where the voice coil (moving coil) is connected to an outgoing line that passes through a hole in the body of the speaker, but does not teach that the outgoing line is connected to a connection terminal formed on an outer side of the body. Hans teaches of a subminiature bone conduction speaker that does have an outgoing line that is connected to a terminal formed on the outer side of the body (page 9 lines 12 -23). It would have been obvious to one of ordinary skill in the art at the time of Yoshii's invention to include Han's connection terminal on the body of Yoshii's speaker so as to prevent direct pulling on the voice coil which cause damage to the speaker.

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Claim 6: Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshii (JP 58182398) and in further view of Han (WO 02/25989 A1). Yoshii teaches

a body having a shape of a cylinder of which upper portion is opened (main body case); (page 13 paragraph 4; Fig 7 item 31)

a yoke (core) which is disposed in a lower portion of the body and of which center has a protrusion; (page 13 paragraph 4, page 6 paragraph 3; Fig 7 item 21)

a ring type magnet (Fig 7 item 20) which is formed on the edge of the yoke and apart from an end portion of the protrusion by a predetermined clearance; (page 6 paragraph 3; Fig 7 item 20)

an upper plate (mounting member) which is formed on the magnet; (page 6 paragraph 3; Fig 7 item 18)

a mastoid (outer skin contact chip) which is contacted to bone conduction of a user and by which vibration is transmitted to the user; (page 14 paragraph 2; Fig 7 item 16)

an acoustic vibrating plate (suspension plate, Fig 7 item 34') which is inserted at a lower side of the mastoid (outer skin contact chip) to cover the opening portion of the body and which is made of an elastic material; (page 13 paragraph 4; page 6 paragraph 3)

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an auxiliary vibrating plate (diaphragm, Fig 7 item 36) which is inserted under the acoustic vibrating plate (suspension plate) which is inserted to the mastoid (outer skin contact chip); (page 14 paragraph 2; page 6 paragraph 3)

a voice coil (moving coil, Fig 7 item 17) which is attached to the auxiliary vibrating plate (diaphragm) and which is inserted between the end portion of the protrusion of the yoke (core) and the ring type magnet; (page 13 paragraph 4 – page 14 paragraph 2; page 6 paragraph 3)

a front cap (cover, Fig 7 item 39) for fixing the acoustic vibrating plate (suspension plate, Fig 7 item 34') on the body; (page 13 paragraph 4) and

an electrical signal input unit (Fig 7 item 26) for inputting an electric signal to the voice coil. (page 9 paragraph 4; page 13 paragraph 2)

Yoshii does not explicitly teach of a mobile phone having a bone conduction speaker, however, Han does teach of a subminiature bone conduction speaker being used in a mobile phone (page 1 lines 11 –17). It would have been obvious to one of ordinary skill in the art to include Yoshii's bone conduction speaker in a mobile phone since the speaker would improve the communication by reducing the external noise that could be picked up from the outside.

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Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US Patent 6141427

US PGPUB US 2003/0012395

US Patent 2077425

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lloyd Weekes whose telephone number is 571-220-1067.

The examiner can normally be reached on Mon-Thurs 9am -3:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Myhre can be reached on 571-220-1065. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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